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CONTENTS

Teaching-Loads of Ohio High-School Teachers 141
KENNETH J. CRIM, *Buckland, Ohio, public schools*

The Ohio School of the Air 148
T. C. HOLY, *Bureau of Educational Research*

Arithmetic Learning in an Experience Curriculum 154
CATHERINE M. WILLIAMS, *Bureau of Educational Research*

Editorial Comment 163

Readings 164

BOOKS TO READ—*James Harvey Robinson: Teacher of History, Counseling in Schools of Nursing, Film and Education, Radio in Elementary Education, The Emerging High-School Curriculum and Its Direction, Studies of Children, Current Trends in Psychology.*

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Teaching-Loads of Ohio High-School Teachers

By KENNETH J. CRIM

ESTABLISHING teaching-loads on an equitable basis is one of the major problems confronting all school administrators. The task of allocating work within the school so that teachers will have similar loads is made more difficult by the fact that one must consider not only regular classroom duties but also all the other duties which are required of the teacher. In the interest of fairness, teacher morale, and effective teaching, administrators must use care in assigning the varied duties, both class and extra-class, so that the teachers on their staffs will have as equitable loads as possible.

The author recently completed a study of the teaching-loads of high-school teachers in 44 high schools in the county systems of Allen, Auglaize, Hardin, Logan, Mercer, Shelby, and Van Wert Counties of Ohio.[1] Questionnaires were mailed to the school executive of each high school for distribution to the teachers under his direct supervision. One hundred ninety-six teachers returned usable questionnaires. Only the questionnaires of teachers devoting full time to duties in Grades VII through XII were used. Replies from local school executives were omitted from the analysis as were those from the agriculture teachers who taught in two different schools.

The 44 high schools classified according to the enrollments of the schools are shown in the following percentages:

School Enrollment	Percentage of 44 Schools
Above 300	4.6
250–299	6.8
200–249	4.6
150–199	22.7
100–149	38.6
Under 100	22.7

[1] Crim, Kenneth J. "High-School Teaching-Loads in Seven Ohio Counties." 1949. An unpublished Master's thesis on file in the library of Ohio State University.

The enrollments range from 63 students to 408 students. There are more schools in the group having enrollments of 100 to 149 students than in any other group.

In Table I the high-school teachers are classified as to whether they are teachers of special or academic subjects and the number of men and women in each category is also shown. The subjects for which special teaching certificates are issued by the Department of Education in the State of Ohio, here considered as special subjects, are art, business education, industrial arts, library science, music, physical education, speech, vocational home economics, and vocational agriculture. All other subjects are considered as academic subjects. Teachers are classified as special teachers (Columns 2 and 3) or academic teachers (Columns 4 and 5) according to the type of subject in which they have the largest number of pupils.

TABLE I

TEACHERS IN SEVEN OHIO COUNTIES CLASSIFIED ACCORDING TO THE ENROLLMENT OF THE SCHOOLS, 1948–49

SCHOOL ENROLLMENT	NUMBER OF TEACHERS				PERCENTAGE OF 196 TEACHERS
	Special		Academic		
	Men	Women	Men	Women	
(1)	(2)	(3)	(4)	(5)	(6)
Above 300	6	2	10	8	13.3
250–299	3	5	12	4	12.2
200–249	1	3	4	2	5.1
150–199	9	5	10	15	19.9
100–149	12	15	21	20	34.7
Under 100	2	2	13	12	14.8
Total	33	32	70	61	100.0

THE Douglass formula[2] was used to compute the teachers' loads; the comparisons are made, therefore, in terms of Douglass formula units. "Each [unit] is theoretically equivalent to teaching one period a class which requires preparation, in which there are 20 pupils and which meets for 45 minutes."[3] The instructional load constitutes a synthesis of the different factors considered in the Douglass formula. In computing the instructional load, the number of students, the number of classes and duplicates, and the relative difficulty of the subjects have been considered.

[2] Douglass, Harl R. *Organization and Administration of Secondary Schools.* Boston: Ginn and Company, 1945. p. 118.

[3] *Ibid.*, p. 115.

As illustrative of teachers' loads, the duties of those men and women who occupy the median positions in the various distributions shown in the tables will be given in the text. The instructional duties and in-school extra-class duties will be given in terms of periods per week, and the out-of-school extra-class duties will be given in terms of hours per school year.

Table II presents data regarding the instructional part of the teacher's total load. The range is from 17.4 units to 37.2 units for the men and from 17.7 units to 41.8 units for the women. The man teacher having the median load has 27.1 units and teaches 38 periods of industrial arts; but 19 of the periods are duplicates, and the number of students he has is

TABLE II

INSTRUCTIONAL LOADS OF THE HIGH-SCHOOL TEACHERS IN SEVEN OHIO COUNTIES

INSTRUCTIONAL LOAD IN DOUGLASS UNITS	PERCENTAGE OF GROUP		
	Men	Women	Total
(1)	(2)	(3)	(4)
39–41.9	.....	3.2	1.5
36–38.9	4.9	.....	2.6
33–35.9	8.7	14.0	11.2
30–32.9	18.4	23.7	20.9
27–29.9	18.4	23.7	20.9
24–26.9	21.4	14.0	17.9
21–23.9	11.7	12.9	12.3
18–20.9	15.5	7.5	11.7
15–17.9	1.0	1.0	1.0
Total number	103	93	196
Median	27.1	28.4	28

small. The woman teacher having the median load of 28.4 units teaches 20 periods of English and 6 periods of physical education each week. Table II shows that 32 per cent of the men teachers and 40.9 per cent of the women teachers have 30 or more units of instructional load. The median load for the women is 1.3 units greater than that for the men. The percentages and medians indicate that of the 196 teachers women tend to have heavier instructional loads than do the men.

THE instructional loads of the teachers of academic subjects are compared in Table III with those of the teachers of the special subjects. It can be noted that there is a relatively wide difference in the medians of the two types of teachers. The percentages also show that while only 4.6 per cent of the special-subject teachers have 33 or more units of instructional

load, 27.6 per cent of the academic-subject teachers have more than 33 units.

The other phase of the teachers' loads which was considered is the extra-class duties which are assigned to the teachers, including those during the school day and those which take place outside the school day. The Douglass formula does not allow for the relative difficulty of the various extra-class activities of the teachers as it does for the relative difficulty of the subjects taught. The number of periods devoted to all extra-class activities is divided by two, thus implying that extra-class duties are only one-half as difficult as instructional duties.

Table IV summarizes the varied extra-class duties of the

TABLE III

SPECIAL AND ACADEMIC HIGH-SCHOOL TEACHERS IN SEVEN OHIO COUNTIES CARRYING THE INDICATED INSTRUCTIONAL LOAD

INSTRUCTIONAL LOAD IN DOUGLASS UNITS	PERCENTAGE OF GROUP	
	Special Teachers	Academic Teachers
(1)	(2)	(3)
39–41.9	.....	2.3
36–38.9	.....	3.8
33–35.9	4.6	14.5
30–32.9	12.3	25.2
27–29.9	18.5	22.1
24–26.9	18.5	17.6
21–23.9	16.9	9.2
18–20.9	29.2	3.8
15–17.9	.....	1.5
Total number	65	131
Median	24.6	29.4

teachers. The range is from 1.9 units to 21.2 units for the men and from 0 units to 14.2 units for the women. The man occupying the median position in regard to extra-class loads listed the following duties for the school year: 10 periods of study hall each week, 48 hours of teachers' meetings (state, county, and local), 22 hours working at basketball games, and 20 hours as sponsor of the Hi-Y. The woman occupying the median position listed for the school year: 10 periods a week supervising the cafeteria and 18 hours attending teachers' meetings. Table IV indicates that 17.5 per cent of the men teachers and 4.3 per cent of the women teachers have 12 or more units of extra-class load, and 36.9 per cent of the men teachers and 55.9 per cent of the women teachers have fewer than 6 units of extra-class load. The percentages and medians indicate that of

the 196 high-school teachers included in this survey the men tend to have heavier extra-class loads than do the women.

In Table V are compared the extra-class duties of the teachers of the academic subjects and those of the teachers of the special subjects. The difference between the medians of the

TABLE IV

EXTRA-CLASS DUTIES OF THE HIGH-SCHOOL TEACHERS IN SEVEN OHIO COUNTIES

DOUGLASS UNITS SPENT IN EXTRA-CLASS DUTIES	PERCENTAGE OF GROUP		
	Men	Women	Total
(1)	(2)	(3)	(4)
21–23.9	1.9	.....	1.0
18–20.9	.....	.....	.....
15–17.9	6.8	.....	3.6
12–14.9	8.8	4.3	6.6
9–11.9	22.3	4.3	13.8
6– 8.9	23.3	35.5	29.1
3– 5.9	31.1	36.6	33.7
0– 2.9	5.8	19.3	12.2
Total number	103	93	196
Median	7.7	5.5	6.4

TABLE V

EXTRA-CLASS DUTIES OF THE SPECIAL AND ACADEMIC HIGH-SCHOOL TEACHERS IN SEVEN OHIO COUNTIES

DOUGLASS UNITS SPENT IN EXTRA-CLASS LOAD	PERCENTAGE OF GROUP	
	Special Teachers	Academic Teachers
(1)	(2)	(3)
21–23.9	1.5	0.8
18–20.9	.....	.....
15–17.9	1.5	4.6
12–14.9	7.7	6.1
9–11.9	15.4	13.0
6– 8.9	23.1	32.1
3– 5.9	32.3	34.3
0– 2.9	18.5	9.1
Total number	65	131
Median	5.9	6.6

teachers of special and academic subjects is only .7 of a unit, the academic teachers having the higher median. Table V shows also that 50.8 per cent of the special-subject teachers and 43.4 per cent of the academic-subject teachers have fewer than 6 units of extra-class load. Thus the data included in Table V support those in Table III showing that teachers of the academic subjects have heavier loads than do the special teachers.

THE instructional loads and extra-class loads have thus far been presented separately. It is the total load, however, which the administrators must consider when assigning duties to the teachers. Table VI gives the combined results of the Douglass-formula computation for both the instructional and non-instructional loads of the 196 teachers included in this survey. The total load ranges from 23.1 units to 51.9 units for the men, and from 21.5 units to 43.9 units for the women. The man having the median load had 14 periods of science, 8 periods of physical education, 5 periods of social studies, and 5 periods of reading. His extra-class duties consisted of 5

TABLE VI

TOTAL LOADS OF HIGH-SCHOOL TEACHERS IN SEVEN OHIO COUNTIES

DOUGLASS UNITS OF TOTAL LOAD	PERCENTAGE OF GROUP		
	Men	Women	Total
(1)	(2)	(3)	(4)
51–53.9	1.0		0.5
48–50.9			
45–47.9	1.9		1.0
42–44.9	5.8	3.2	4.6
39–41.9	17.5	12.9	15.3
36–38.9	14.6	17.2	15.8
33–35.9	25.2	30.1	27.6
30–32.9	19.4	20.4	19.9
27–29.9	10.7	9.7	10.2
24–26.9	2.9	5.4	4.1
21–23.9	1.0	1.1	1.0
Total number	103	93	169
Median	34.9	34.3	34.6

periods per week of study-hall supervision and 36 hours during the school year spent in coaching athletics. The woman having the median load had 17 periods of science, 10 periods of mathematics, and 2 periods of physical education each week. Her extra-class duties consisted of 10 periods of study-hall supervision, 69 hours of timing athletic events, 24 hours assisting the dramatic coach, 15 hours attending teachers' meetings, and 4 hours selling tickets for plays. For the teachers in this survey, the medians show very little difference between the total loads of men and women. The percentages, however, for the top five intervals of the distributions in Table VI show that 26.2 per cent of the men teachers and 16.1 per cent of the women teachers have 39 or more units of total load. These

percentages indicate a somewhat heavier comparative load for men teachers than do the medians.

In Table VII are compared the total loads of the teachers of the special subjects and those of the teachers of the academic subjects. Here there appears to be a significant difference. There is a difference of 4.1 units between the medians for the two groups of teachers, the academic teachers having the higher median load. The percentages also show that while 7.7 per cent of the special teachers have more than 39 units of total load, 28.3 per cent of the academic-subject teachers have more than

TABLE VII

TOTAL LOADS OF THE SPECIAL AND ACADEMIC HIGH-SCHOOL TEACHERS IN SEVEN OHIO COUNTIES

DOUGLASS UNITS OF TOTAL LOAD	PERCENTAGE OF GROUP	
	Special Teachers	Academic Teachers
(1)	(2)	(3)
51–53.9	.....	0.8
48–50.9	.....	.....
45–47.9	.....	1.5
42–44.9	.....	6.9
39–41.9	7.7	19.1
36–38.9	7.7	19.8
33–35.9	21.5	30.5
30–32.9	29.2	15.3
27–29.9	20.0	5.3
24–26.9	10.8	0.8
21–23.9	3.1	.....
Total number	65	131
Median	31.7	35.8

39 units. This difference in total load, combined with the results obtained when the instructional and extra-class loads were computed separately for the special- and academic-subject teachers (*see* Tables III and V), serves to emphasize the fact that among these 196 high-school teachers, the teachers of the academic subjects have the heavier loads.

Leading authorities recommend that teachers' maximum loads be less than 30 Douglass units.[4] It is apparent that the teaching-loads of a majority of the teachers included in this study are heavy in terms of the recommendations of these

[4] *See* Cooperative Study of Secondary School Standards. *Evaluative Criteria.* Washington, D. C.: Cooperative Study of Secondary School Standards, 1939. p. 129; and Odell, C. W. "Teacher Load in Illinois High Schools," *Bulletin of the National Association of Secondary-School Principals,* XXXIII (January, 1949), p. 93.

authorities. A comparison of the 65 teachers of special subjects and the 131 teachers of academic subjects shows that the latter have heavier loads, both instructional and extra-class. Obviously the total loads of the academic-subject teachers would be heavier, too. Data in Table VII support this conclusion.

On the basis of the facts presented in this report, the writer makes the following recommendations: First, that in so far as possible administrators make every effort to establish a maximum teaching-load of 30 Douglass units in order to avoid the excessively heavy loads that this study reveals do exist. Second, that administrative efforts be made to reduce the range of teaching-load within a given school by considering not only the extremely heavy loads but also the very light loads. Third, that efforts be made to make more equitable the teaching-loads of the teachers of the special and the academic subjects.

[Vol. XXVIII, No. 6]

The Ohio School of the Air

By T. C. HOLY

In the "Annual Report of the Bureau of Educational Research" covering the year ending August 31, 1945, there is a brief résumé of the founding and development of the Ohio School of the Air. The major facts summarized in that report are briefly mentioned here.

The Ohio School of the Air, the first of its kind in the country, was established in the Ohio State Department of Education in the fall of 1928, under the direction of Ben H. Darrow. At the 1929 session of the Ohio General Assembly $20,000 was appropriated for the School of the Air for each of the years 1929 and 1930. For the biennium of 1931–32 the amount per year was $14,650, and for the biennium of 1934–35 it was $15,290, for each of the two years. For the next biennium the total was slightly less than $23,000.

Since no appropriation was made for the School in 1937, arrangements were made to transfer it to Ohio State University, and $13,000 was included in the Ohio State University appropriation for the operation of the School during the year 1938. From the time of its transfer to Ohio State University until August 1, 1941, it operated under the general direction of the program supervisor of Station WOSU, which carried its programs. At that time, Mrs. Margaret C. Tyler, the present

supervisor of the School, was employed part time. On July 1, 1945, the School was transferred to the College of Education and assigned to the Bureau of Educational Research.[1]

SINCE the founding of the Ohio School of the Air, radio as a tool of education, both formal and informal, has made significant advancement. The situation in 1928 is well described in the following words of the late Ray Lyman Wilbur, then Secretary of the Interior:

> One of the educational questions for which we are seeking an answer is: What are the possibilities of radio in education? At first thought, the radio seems to make it possible to turn the whole world into a single schoolroom and to make it possible for all the pupils of the nation to listen to one message at any one time. Its scope seems unlimited, its possibilities beyond our present conception. . . . No one can speak with finality in this field. More work needs to be done in every direction.

Also, in the Introduction to the same publication Joy Elmer Morgan, editor of the *NEA Journal*, has this to say:

> What about radio in the schools today? It is still embryonic but it is growing. Our best educators no longer call it a fad or brand as mere enthusiasts persons who advocate its use. Experience in other countries, where the educational significance of this new tool is better appreciated than here, is convincing. Master teaching in Cleveland has established results on a scientific basis. The Ohio School of the Air, supported by legislative appropriation, has established itself and has been able to go on in spite of depression and disaster on all sides. . . . The radio has a place in the school. If it can add as much as five per cent to the effectiveness of our schools—and that is a most conservative estimate—it is worth $100,000,000 a year to the educational enterprises of our various states and communities.[2]

The foregoing statements were made during the early development of the radio as a means of communication. It is interesting to compare them with the following quotation taken from a publication in 1945.

> Radio is an indisputable and indispensable part of everyday life. In eight out of ten homes in the United States, adults and children alike spend several hours a day before the loud-speaker, listening to comedians and pseudo-comedians, to symphony orchestras and dance bands, news reporters and commentators, quiz programs and amateur shows, radio drama and melodrama, political speeches and baseball games.[3]

[1] EDUCATIONAL RESEARCH BULLETIN, XXIV (November 14, 1945), pp. 198–99.

[2] Darrow, Ben H. *Radio: the Assistant Teacher.* Columbus, Ohio: R. G. Adams and Company, 1932. pp. vii, ix.

[3] Woelfel, Norman, and Tyler, I. Keith. *Radio and the School.* Yonkers-on-Hudson: World Book Company, 1945. p. vii.

In the light of the development of radio since the founding of the Ohio School of the Air in 1928 and also of the fact that the School has a potential audience of more than a million boys and girls in the schools of Ohio, it seems appropriate to ascertain to what degree its programs are being utilized by the schools of the state. Hence, during the latter part of the school year 1948–49, an evaluation of the School was undertaken under the direction of Clair R. Tettemer. The objectives of that evaluation, as stated in a detailed memorandum prepared by Mr. Tettemer, are as follows:

1. To ascertain the number of teachers and pupils using each of the various series of the Ohio School of the Air through a comparison of actual use of and requests for manuals.
2. To secure an over-all picture of the type and extent of utilization of programs and teachers' manuals of the Ohio School of the Air.
3. To determine the quantity and condition of radio-receiving equipment and instantaneous-recording equipment available to the classroom teachers.
4. To determine whether or not the reception of the Ohio School of the Air programs is satisfactory in the classroom.
5. To appraise the effectiveness of several selected series of programs as actually used in the classrooms.
6. To collect and evaluate suggestions for improving the present programs of the Ohio School of the Air and suggestions for new programs in future School of the Air series.

The data for the study were secured in three ways. First, from the engineering staff of Radio Station WOSU, which carries the programs of the School, a map of Ohio was secured showing the primary-, secondary-, and tertiary-coverage areas of the station. The boundaries of these three areas were determined by the strength of the signal from WOSU. For the primary area this signal strength is 2.0 millivolts per meter, and for the secondary area 0.5 millivolts. The remaining part of the state is in the tertiary area, where reception under the most favorable circumstances is acceptable. The counties included in each of those areas are:

Primary Area—Champaign, Crawford, Delaware, Fairfield, Fayette, Franklin, Greene, Hardin, Knox, Licking, Logan, Madison, Marion, Morrow, Pickaway, Ross, Union, Wyandot.

Secondary Area—Allen, Ashland, Athens, Auglaize, Butler, Clermont, Clinton, Coshocton, Darke, Erie, Hancock, Henry, Highland, Hocking, Holmes, Huron, Jackson, Mercer, Miami, Montgomery, Morgan,

Muskingum, Ottawa, Paulding, Perry, Pike, Preble, Putnam, Richland, Sandusky, Seneca, Shelby, Van Wert, Vinton, Warren, Wood. Tertiary Area—Adams, Ashtabula, Belmont, Brown, Carroll, Columbiana, Cuyahoga, Defiance, Fulton, Gallia, Geauga, Guernsey, Hamilton, Harrison, Hocking, Jefferson, Lake, Lawrence, Lorain, Lucas, Mahoning, Medina, Meigs, Monroe, Noble, Portage, Scioto, Stark, Summit, Trumbull, Tuscarawas, Washington, Wayne, Williams.

Second, an interview schedule was prepared for use both in individual and group interviews of teachers. The questions in the interview schedule are reproduced here:

1. Do you use any of the Ohio School of the Air broadcasts in your classes?

Yes	No	If "yes" What ones?	About how often (check) Nearly every week	Once a month	Occasionally

2. Have you used Ohio School of the Air broadcasts in previous years? Yes No
When and how long?
If "yes" but not using them this year, why did you discontinue?

3. If you are now using or have in the past used these broadcasts, how did you happen to begin?

4. Do you have a copy of the School of the Air Bulletin? Yes No
How did you get it?

5. Do you have any of the teachers' manuals for the various series? Yes No If "yes" which ones:

How did you get them?

If "no" why not?

Do you ever use manuals belonging to the school or to another teacher? Yes No
Do you ever share your manuals with other teachers in the building? Yes No

6. Do you ever use other radio broadcasts in your classroom? Yes No
If "yes" what type?
About how often?

7. When your class listens to a radio program, do they usually listen: (check) ....in your own classroom ....with another class in another teacher's room ....in a special radio classroom ....in the auditorium ....(other) ....?

Does your class listen to the program over: (check) .....a classroom radio .....a central sound system with a loud-speaker in every room .....an auditorium radio .....(other) .....?
This radio belongs to:
.....the school .....the teacher .....a pupil .....(other).....

8. How good is the reception of School of the Air programs in your class?
.....always satisfactory .....usually satisfactory .....seldom satisfactory
.....always poor?

9. Does your school have an FM (Frequency Modulation) radio? Yes No
Does your school have any type of recording equipment? Yes No
If so, what type is it?
.....

10. Do you usually spend a few minutes before a program preparing the class for the program? Yes No If so, what sort of thing do you usually do?.....
.....
Do you usually spend some time after the broadcast in "follow-up" of the program? Yes No Description.....
.....

11. Do you have any suggestions for improving the programs of the Ohio School of the Air?
.....
.....

12. Can you suggest new programs for the School of the Air that would be helpful to you in your teaching?
.....
.....

The interview schedules were filled out by the following groups:

1. Eighty-five teachers selected at random from county, city, exempted-village, and private schools in each of the primary-, secondary-, and tertiary-coverage areas. This sample was selected from the first 949 requests received by the Ohio School of the Air for the teachers' manuals.
2. Seventy teachers divided approximately equally between those who had sent for teachers' manuals and those who had not.
3. One hundred thirteen elementary-school teachers in the Zanesville public schools.
4. One hundred thirteen elementary-school teachers in the Lima public schools.
5. One hundred five elementary teachers in the Marion city schools.

Of these 486 teachers who completed in full or in part the interview schedule, 62 per cent indicated that they made use of the broadcasts of the Ohio School of the Air in their classes.

Third, a double post card was mailed out to teachers and

administrators who had requested teachers' manuals in the autumn of 1948 to inquire what distribution had been made of the manuals thus received.

THE complete report of the study has been placed in the hands of Mrs. Tyler, supervisor of the school staff. Space permits only the inclusion of a small part of the findings of this study.

First, of the 16,130 teachers' manuals mailed out in the autumn of 1948, 90 per cent were in the hands of teachers, 4 per cent in the hands of administrators, 3 per cent were being used for reference, and 3 per cent had not been distributed. These figures check almost exactly with another source of information used to ascertain what distribution had actually been made of the manuals.

Second, of the teachers who filled out the interview schedule, 52 per cent reported that they made use of the program *Story Time*. This is followed by *Play Time* with 42 per cent, *Music Time* with 41 per cent, *Bookland* with 38 per cent, *Once upon a Time* with 29 per cent, *News* with 22 per cent, *Science Club* with 15 per cent, and *Time for Music* with 12 per cent.

Third, the average number of programs used per week by the teachers who filled out the interview schedule was 2.5.

Fourth, 50 per cent of the teachers who filled out the interview schedule reported that their classrooms were equipped with a radio, 27 per cent received their broadcasts from a central sound system, and 1 per cent took their pupils to the auditorium to get the program. The remaining 22 per cent did not answer this question.

Fifth, 72 per cent of the teachers interviewed said that the radio belonged to the school; 9 per cent, to the teacher; 3 per cent, to some school group, generally the Parent-Teacher Association; and 16 per cent did not respond to the question.

The most important finding of all was that within the primary listening area, two out of every three elementary-school classrooms listened to one or more of the School's programs each week. For the state as a whole, 24 per cent of all the children enrolled in the elementary-schools listened to one or more of the School's programs each week.

Arithmetic Learning in an Experience Curriculum

By CATHARINE M. WILLIAMS

MANY elementary-school teachers returning to their classroom duties are determined to make their teaching of arithmetic more effective. They are disturbed over the vast amount of data collected by the armed forces, by colleges, and by experts in the field of mathematics showing that arithmetic breaks down on test situations given to young adults and fails to function adequately in the everyday living of their parents. These data show that it is necessary to guide arithmetic learning in such a way that pupils will achieve a more permanent ability to think quantitatively and to act intelligently where number situations are concerned. A few teachers will be free to try out new ways of achieving this goal.

The writer, while teaching in the University School, Ohio State University, made a study of arithmetic. In the University School functional learning and an experience curriculum are being constantly explored as means of making school life exemplify democratic living.

The purpose of the study was to determine the mathematical learning which took place in nine successive sixth-grade groups (1935 through 1944) under an experience curriculum and to develop the implications for curricular and instructional practices.[1]

Perhaps the most fruitful manner of sharing with fellow teachers the results of this study is to consider some of the questions most frequently brought up by teachers who have discussed the study with the writer. Throughout this article the questions are answered by the use of excerpts from the thesis. The first question is: Will you describe the school situation in which the study was carried on?

Since the basic idea underlying University School is that it exemplify the democratic way of life, the program is conceived and executed as a means of promoting the optimal development —physical, emotional, social, and intellectual—of the child. Therefore the school is a place where children live together;

[1] For the detailed account of this study *see* Williams, Catharine M. "The Contributions of an Experience Curriculum to Mathematical Learning in the Sixth Grade." 1947. An unpublished Doctor's thesis on file in the library of Ohio State University.

where they make plans co-operatively and share responsibilities to achieve common purposes. The children meet many situations which involve planning, making choices, and evaluating efforts and achievements; and through these experiences they are helped in making choices wisely and in assuming responsibility for their decisions.

The elementary division of the school makes use of an experience curriculum which is formulated by teacher-pupil planning and is based on the belief that the child learns by doing. In the upper-primary and intermediate grades, the pupils and teacher consider together and agree upon a worthwhile topic or problem for study by the group. This is called the unit of study. Each child, individually or working as a member of a small group, assumes responsibility for doing a piece of work to further the group study. Work pertaining to the group study is carried on at a time designated as work period. Provision is also made for children to pursue individual interests. These individual interests are carried out during periods set aside for either free-choice or special-interest groups.

Not all of the work is done in connection with units of study. Problems of living harmoniously together, problems of sharing with others the equipment and facilities of the school plant, and other problems both social and personal need to be solved as children plan, work, eat, and play together.

Persons unfamiliar with the school frequently raise this question: Was not your experiment confined to groups of selected, superior children? Social backgrounds of the pupils were diverse, including children from racial and cultural minorities. Experience with the classes studied indicates that financial independence furnishes no guarantee of physical health, emotional stability, or social adjustment. In fact, an unusual number of problem cases were attracted to the upper grades of the school because of its reputation for meeting individual differences.

ANOTHER common question is: What, exactly, do you mean by experience curriculum? Experience curriculum as used here denotes the guidance of group and individual experiences in which living and learning are integrally related, and in which pupil-teacher planning is free to proceed in terms of criteria that are meaningful to learners because they themselves have been involved in the process of formulating the value

judgments, in projecting the plans and activities in terms of the criteria, and in co-operative appraisal of choices, processes, and outcomes in terms of their own criteria of value. The experience curriculum is not limited to content based entirely on direct firsthand contacts with reality. It is not to be confused with a more or less casual, opportunistic dependence on incidental learning. The curriculum includes all aspects of guided learning that are integrally—not incidentally—related in ways which learners accept. They accept them because they are guided into a realization of the ways in which meaningful learnings can be broadened, extended, and applied, and are not subjected to the cramping restrictions or expectations of predetermined, preorganized subject-matter requirements. Under this concept, the school becomes responsible for helping pupils to use every experience as a resource for further learning.

Another question in connection with clarifying the concept of experience curriculum is this: Is "experience curriculum" just a different name for incidental learning? The two are quite different. Confusion arises from the fact that in neither program is subject-matter presented as an end in itself or in its logical systematic form.

When a particular subject-matter area is considered, basic differences become readily apparent. Incidental learning in arithmetic takes place, not as a definitely sought-after outcome but as a fortuitous residue, because another outcome is the goal. On the other hand, the experience curriculum is a planned way of learning subject-matter functionally in life contexts. The teacher plans with the children so that the content and use of arithmetic—as well as the language arts and the social studies—are integral parts of living which contribute to promoting communication and critical thinking, developing social insight, and increasing computational skills and mathematical insight. Arts of expression function concurrently in ways which enrich, clarify, and relate these learnings. Obviously, the term "incidental learning" does not apply to an experience curriculum so conceived, since incidental learning falls far short of supplying the carefully guided learnings provided by the integrated program of the experience curriculum.

A further question concerning the concept of the experience curriculum is this: Is there a logic in such integrated arithmetic learning? There is definitely a logic in the integrated experience. It is not always recognized, however, because it differs

from the traditional subject-matter logic. The only logic traditionally recognized for teaching arithmetic derives from the internal structural order and organization of the subject, the order which the mature specialist recognizes as mathematically logical. Subject-matter is presented to the learner in this form on the assumption that he, a novice, can take over ready-made the perfected form worked out by experts.

The logic of the integrated program, usually referred to as psychological organization of subject-matter, derives from life itself. Subject-matter is presented to the learner as a method of finding and testing meanings to meet experimental needs, on the assumption that the sense or meaning of the systematic structure of mathematics exists for the learner only as it is abstracted from experience.

In short, the traditionally recognized organization begins with the systematic structure and follows it meticulously, fearful of any omission or disorganization of items of subject-matter. On the other hand, the psychological approach terminates with the systematic structure, built up from a cruder to a more refined quality of experience. It refuses to take a chance on the carry-over value of formal meaningless performances.

A QUESTION raised with regard to the teacher's rôle is this: Could you briefly indicate the characteristics of guidance by the teacher in your experimental situation? The guidance function of the teacher is conceived as broad and inclusive. The teacher was vitally concerned with optimal development of personalities; she constantly studied the whole range of individual differences—differences in capacity, disposition, environmental background, family and personal history, special attitudes, habits, handicaps, achievements, interests, and needs. She also studied the group to see individuals in relation to other members of the peer group, and in relation to other groups. From her study and from the co-operative planning done by teacher and pupils, a program for guided growth emerged, based on pupil needs, interests, and potentialities. The teacher was concerned not only that she herself be alert to the needs and rights of every member of the group, but also that her guidance should help children to realize their own needs, appreciate the efforts and achievements of others, respect the rights of others, think clearly, and face social responsibilities squarely.

Throughout the program, as children worked on commonly shared problems or on individual interests, the teacher encouraged them to think out their own ways of arriving at solutions instead of following patterns. By providing this sort of exploratory experience, the teacher encouraged individual initiative and helped children to gain that confidence and satisfaction which come from having discovered ways and means for oneself.

Because of her concern for individual growth, the teacher accepted each child at his particular stage of development and felt responsible for seeing that he progressed as rapidly as his well-being would permit. There was no attempt to hold all children to the same level of achievement.

For guidance with special reference to arithmetic, the teacher was concerned with the whole array of total situations to which mathematical concepts and principles could contribute significantly. Through guiding children in co-operative and individual planning, executing, evaluating, and reconstructing their work, the teacher aimed at helping them grow in ability to discover where and how arithmetic could contribute significantly, and to employ mathematical processes and principles effectively in such situations. She guided experiences so that they would call for judgment and action on the part of pupils. Gathering, organizing, and refining data became an integral part of the experiences.

As children used arithmetic to achieve their own purposes, they were helped to become increasingly aware of ways in which arithmetic could function, not only to meet immediate needs and bring to light new or more revealing data on problems both computational and non-computational, but also to arrive at mathematical understandings and generalizations as rapidly as possible.

Diagnosis of needs and constant evaluation of outcomes in the light of purposes were an essential part of the teacher's guidance. Anecdotal notes based on continuous observation of children's day-by-day performance provided a resource for continuous diagnosis and evaluation not possible to secure in any more formalized manner.

A QUESTION often raised is this: Your nine sixth-grade groups each carried on a different unit or units of study. Also, activities other than the units varied from year to year. Did this mean that each sixth grade covered radically different

arithmetical material? Flexibility of content made no appreciable difference in the scope or the recurrence of socially significant arithmetical material.

Another question invariably asked is this: Did opportunity and need for the use of arithmetic actually occur in a sufficient number of instances to provide consistently for guided arithmetic learning? When the content of the arithmetic utilized in meeting the needs which grew out of the curricular experiences was listed, it was apparent that there was a wealth rather than a dearth of arithmetic inherent in, and essential to, the daily living of children when they were carrying forward group and individual purposes.

Among the questions there is always this one: Do children actually learn arithmetic content, that is, the basic processes and principles, when taught through the experience curriculum? One means used to get an answer to this question was the Stanford Achievement Tests in arithmetic. Use of these tests made it possible to compare the achievement of experience-curriculum groups with grade norms standardized for an entirely different type of curriculum.

Analyses of these standard test scores for the nine successive groups revealed that they compared very favorably with the norms. In all but 7 of the 208 cases involved, the composite score showed growth of more than 0.6 in the school year. The average gains for the nine successive years were: 1.3, 1.25, 1.4, 1.89, 2.0, 1.69, 1.8, 1.9, and 1.8, respectively. At the beginning of Grade VI, the majority of the composite scores fell in Grades IV and V; at the end of the year they fell in Grades VI and VII. For four of the nine years, the median score at the end of Grade VI was 7.0; during the other years it was 6.3, 6.4 (twice), and 6.6 (twice). The children consistently scored higher in the reasoning than in the abstract examples test. On the whole, whether a child entered Grade VI ranking somewhere in Grade III on the test or ranking somewhere in Grade VI or above, he made significant growth during the year.

Another question is this: Is there any unusual growth pattern as indicated by Stanford Achievement Test scores? In an investigation of the functional program of reading, Miss Loomis found that throughout the primary grades children did not reach standard grade norms on the Stanford Achievement Test. However, in the intermediate grades children began to progress at an accelerated rate, and by the end of Grade VI not only had

most of the children far surpassed the grade norm but many had reached the highest limit of the test.[2] Perhaps arithmetic in an experience curriculum follows a similar pattern of slow growth preceding an accelerated growth rate. Additional investigation is needed to learn whether or not this is the case.

ANOTHER question is: Did you make an attempt to learn whether or not the children in the nine experimental groups made any significant growth in ways not measurable by the Stanford Achievement Test in arithmetic? Standardized tests designed to evaluate progress in achieving democratic values were not obtainable. For this reason a series of teacher-devised tests was given, designed to gather evidence to show whether or not guidance which helped children to base their plans and selections on values really did develop initiative, critical thinking, independent work habits, a sense of responsibility, disposition and ability to carry an activity through to completion, disposition to think quantitatively in any life situation in which such thinking is needed, and to do so flexibly and naturally in terms of the situation. Growth as measured by these various tests given regularly to the various groups indicated that the functional arithmetic program of the experience curriculum was successful in bringing about significant gains in every one of the democratic values mentioned.

Consideration of these results leads to the question: Do pupils make greater progress with respect to these democratic values in the experience than in the traditional curriculum? To get an answer to this question, reports concerning three successive seventh-grade classes in mathematics were studied. These classes were composed of approximately equal numbers of pupils who had come through the experience curriculum and the traditional curriculum. These reports had been written by experienced high-school teachers who were specialists in mathematics, to be issued as routine reports to parents. The writers, teachers experienced in the use of various techniques of evaluation, had no inkling that the reports were to be used for research purposes. Copies of the reports on file at University School were made available later for this study.

Detailed analyses of the reports for each of the three years were made. Value items as credited to each group were tabu-

[2] Loomis, Mary Jane. "An Appraisal of a Functional Reading Program in an Elementary School." 1939. A Master's thesis on file in the library of Ohio State University.

lated and translated into percentages to make comparisons meaningful. These analyses revealed that in each of the three years the children educated through the experience curriculum showed significant advantage over children educated through the traditional program in the following respects: the ability to carry on with a minimum of guidance by the teacher, ability to apply principles to new situations, desirable attitudes toward work, wise use of time, and the development of independent work habits. In those years in which the understanding of basic principles, the ability to do critical thinking, and participation in discussion were singled out and reported upon, the children educated through the experience curriculum again showed significant advantage over the children educated through the traditional program.

The advantages in these areas were not merely marginally significant. For example, when critical thinking was reported upon, it characterized 21.2 per cent more of the experience-curriculum group than of the traditionally educated group. In the other two years critical-mindedness was reported upon indirectly under good understanding of basic principles, ability to grasp new principles, and the like. In these cases the experience-curriculum group showed an advantage of 16.6 per cent and 28.8 per cent, respectively, over the traditionally educated group.

These data lead to the further question: Were comparable analyses made of the progress reports concerning the computational skills of the three successive seventh-grade groups? They were, and they showed no significant superiority of either group over the other in so far as computational skills were concerned.

Frequently this question is asked: Does teaching arithmetic through the experience curriculum mean spending a disproportionate amount of time on that area? When every area is utilized to contribute its share to the enrichment of the experience, every area shifts between major and minor rôles. The rôle is determined by the situation. All but the most pressing arithmetic experiences were delayed until the arithmetic period. Investigation in other areas of curricular experiences was being carried on at the same period as this investigation. Hence, distortion of the program in favor of any one area would have been most difficult, if not impossible.

Another pertinent question is this: What were the limita-

tions of your study? Briefly stated, the limitations were that it covered but a single grade, the sixth, under the guidance of a single teacher, the investigator.

A FINAL question concerning the experience curriculum is this: Is it not risky to suggest that teachers other than specialized experts assume so great a responsibility for the curricular experiences as the experience curriculum necessitates? This question is based on the assumption that the presentation of arithmetic item by item in its systematic structural form demands less skill and less knowledge of the subject on the part of the teacher than does allowing the need of the situation to determine the content. The assumption is certainly open to question. If teaching arithmetic involves nothing more than following textbook presentation item by item, the assumption is valid. If, however, teaching of arithmetic is extended to include making meaningful to individual learners the whole gamut of mathematical understandings and relationships involved in those items, the validity of the assumption is dubious.

When teaching of arithmetic is so extended, the teacher who is forced to begin with the systematic structure and follow it through topic by topic has two strikes against her. Since few actual needs and pertinent illustrations will fortuitously occur at the time each item must be presented, the teacher constantly has to contrive artificial examples and illustrations in an attempt to make the work more than meaningless performance. Or failing to do this, the teacher may foster manipulative skill in processes where meanings or uses are not grasped. When all children must move along to a new topic together, the teacher can make but little actual provision for individual differences of grasp or skill and there is but little opportunity to develop the relationships between processes and topics. Because arithmetic is treated as an isolated subject, the teacher also finds it most difficult to develop in children sensitivity to relationships between arithmetic and other isolated subjects. She also finds it difficult to give arithmetic vital bearings. Since there are no inner drives to motivate the learner, the teacher finds it necessary to use external motivations such as contests, awards, devices such as "climbing the ladder," or pressures like fear of low marks or failure. Under such circumstances, it is small wonder that all but the hardiest learners find arithmetic diffi-

[*Continued on page 167*]

EDITORIAL COMMENT

A School Farm Offers Educational Opportunity

It is a pleasure to report that at least one public school in Ohio now has its own farm. Last fall, C. C. Fay, a coal operator and large landowner, gave a tract of 121 acres to the Jewett school district in Harrison County. This has been named the C. C. Fay Experimental Farm and is to be used by the school in carrying on its educational program. Elias Lewis, teacher of vocational agriculture in Jewett High School, played a leading part in securing the farm for the school and will be the person chiefly responsible for its management.

The farm consists of hill land that is typical of much of the land in the vicinity. It is situated about two miles from the school. It contains a few acres of spoil banks left by strip mining of coal, and is adjacent to a much larger area of spoil banks. Much of the land in the farm is badly eroded and unproductive. A considerable part is woodland.

Even though the school has had the farm for less than a year, a good start has been made in its rehabilitation and development as an agricultural and educational project. Through the Harrison County Soil Conservation District a farm plan has been prepared. This was done with the assistance of technicians of the United States Soil Conservation Service, whose services were made available to the school on the same terms as they are to other landowners in the district. This farm plan, like others developed with the help of these technicians, provides for the use of each acre in accordance with its capabilities and for the improvement and conservation of the soil. The plan provides for keeping the present wooded portion in forests, the reforestation of certain areas, cultivation of the relatively small portions that are suitable for this, and devoting much of the acreage to permanent pasture.

Obviously, the farm offers many educational opportunities to the Jewett school and its community. Its primary function will be to serve as a laboratory for students of vocational agriculture, in which about half of the high-school boys are enrolled. Already these students, under Mr. Lewis' direction, have a number of projects under way. But the farm should

[*Continued on page 168*]

READINGS

Books to Read

HENDRICKS, LUTHER *V. James Harvey Robinson: Teacher of History*. New York: King's Crown Press, 1946. xii+120 pp.

As the title indicates, this book deals with James Harvey Robinson as a teacher of history. Under that phrase we must include his authorship of a series of extraordinarily popular textbooks.

The report that he resigned his professorship because his freedom had been restricted is shown to be untrue. He resigned to organize the New School for Social Research. In the process, Robinson made a discovery about human nature that should have proved useful to a historian. The New School was to be run democratically and co-operatively without any officers invested with authority. The result was an internal crisis so severe that Alvin Johnson testified that, within a year, every man seemed turned against every other man.

Robinson was the author of two philosophical books, *The New History* and *The Mind in the Making*. Both were enthusiastically received, but some of the principles proposed in these books need to be qualified. The useful principle of historical continuity, if taken too absolutely, will dissolve events and individual men in an evenly flowing current of empty time. *The Mind in the Making* would base the social studies upon facts alone, avoiding all theory. This is logically impossible, and Robinson, himself, had so considered it in *The New History*. Indeed as Robinson grew older he became less cautious, more propagandist in temper. Mr. Hendricks does not deal with his philosophy of history, which is unfortunate. The book will, nevertheless, interest teachers of history and social studies and any who are curious about the making of the American mind in which James Harvey Robinson played a part.

H. G. GOOD

GORDON, H. PHOEBE; DENSFORD, KATHARINE J.; AND WILLIAMSON, E. G. *Counseling in Schools of Nursing*. New York: McGraw-Hill Book Company, Inc., 1947. xiii+279 pp.

The varying backgrounds of the authors serve to give scope and balance to this very practical and realistic study of counseling as it can and should function in the modern program of nursing education. Dealing first with concepts fundamental to all guidance programs, it then proceeds to their application to the education, work, and play of the student nurse.

In order to be objective, some space is given to the historical background of nursing and the professional environment of the student nurse. Traditional and current attitudes and practices are touched upon with emphasis on democratic procedure. The need for orientation of the entire school and hospital staff is discussed: "students are there to learn—not to displace other workers—. . . they can learn . . . if everyone accepts the goal of student learning" (page 21).

Very early in her course, the nurse adds to the adjustment problems common to all students those encountered in the complex hospital situation. Ways

whereby counselor and faculty can aid her to adjust harmoniously to the total environment are explored and illustrated.

This little book is useful as a guide, especially if staffs are unprepared in principles and techniques. The last two chapters suggest ways of setting up and implementing a counseling program as an increasingly helpful service to students.

FRANCES MCKENNA

ELLIOTT, GODFREY M., editor. *Film and Education.* New York: Philosophical Library, 1948. xi+597 pp.

This symposium on the rôle of the film in the field of education comprises 37 chapters and is divided into five parts, The Nature of the Educational Film, The Educational Film in the Classroom, The Educational Film outside the Classroom, The Educational Film Abroad, and Administrative Problems and Practices.

Almost every field of activity dealing with films is covered in this book. It is difficult to single out chapters which will be of special interest to readers. I like Dean McClusky's classification and analysis of the twelve types of educational motion pictures, namely, narrative, dramatic, discoursive (*sic*), evidential, factual, emulative, problematic, incentive, rhythmic, therapeutic, drill, and participative.

Kenneth Norberg makes suggestions about the ways films can be used in the teaching of reading. Glen Burch has an excellent chapter on "Films for Film Forums and Adult Groups." William S. Hockman writes with his usual skill on "The Film in Religious Education." A new and interesting development is discussed by R. Russell Munn in "The Film and the Public Library." Ford Lemler treats "The University or College Film Library," and William G. Hart gives his experience on "The Local Film Program and Its Director."

This volume also takes us abroad. Thomas Hodge discusses "The Educational Film in Great Britain." Gordon Adamson writes about "The Educational Film in Canada."

This book will be a useful reference volume for a person who wishes to get an understanding of the broad range of the use of the film in education.

EDGAR DALE

WILLEY, ROY DEVERL, AND YOUNG, HELEN ANN. *Radio in Elementary Education.* Boston: D. C. Heath and Company, 1948. x+450 pp.

This book on the use of radio in the elementary school is obviously intended as a resource book for elementary-school teachers and as a textbook for classes in teacher-training institutions. It is exhaustive in pointing out subject-matter fields in which broadcasts can be utilized. It is equally exhaustive in pseudo research. The book abounds in bibliographies, footnotes, and quotations. It leaves the reader wondering how two people can have read so much in the field and do so little in the way of significant interpretation of data. The average teacher would be overwhelmed by the wealth of detail. He would probably decide to forget radio listening and stick to textbook instruction, since he is bewildered by helps on how to teach everything from religion to arithmetic on the air.

The strictly instructional side of radio broadcasting is overemphasized, and not enough attention is paid to the importance of incidental learnings or

attitude-building. It is commendable that a section of the book is devoted to possible uses of transcriptions. This phase of radio education is seldom treated adequately in textbooks. Here the reader finds easily the practical, down-to-earth advice that in other parts of the book is lost in a maze of quoted materials and composite thinking.

MARGARET C. TYLER

SPEARS, HAROLD. *The Emerging High-School Curriculum and Its Direction.* New York: American Book Company, 1948. xii+416 pp.

This volume is a new edition of a book by the same title published in 1940. A short introductory chapter, which sets the stage, has been added. Following this are sixteen chapters taken from the original edition, with practically no revision. The final chapter entitled "United States Curriculum Mission to Chile" is entirely new. Just why this material is included is not clear. It contributes little or nothing beyond indicating the difficulties involved in changing the curriculum of a foreign country.

Essentially, then, the volume is a reissue of a very excellent work, which gained wide popularity because of its easy style, interesting material, and clever cartoons. It contains some interesting examples of forward-looking curriculum-revision programs of the late 1930's. For those who wish to become familiar with the curriculum thinking of the period just preceding the second World War, the book is worth while. It contributes little or nothing to the present. It is true, as the author points out, that the second World War halted curriculum development, but this hardly justifies the continuation of a pre-war outlook, excellent though it may have been. There are forces at work in 1949 which have important implications for the high-school curriculum. These cannot be ignored by educators.

HAROLD ALBERTY

MEYER, GLADYS. *Studies of Children.* New York: King's Crown Press, 1948. iv+176 pp.

This book comprises a series of essays written by graduate students of the New York School of Social Work. The essays are based on experience and observations in classes, nurseries, foster homes, children's court, and social agencies dealing with children's problems. It is not surprising that the writers state repeatedly that a problem in child behavior usually has a parent problem in the background. Overanxiety, fear, nervous tension, worry—these and similar mental states indicate the concern of parents and their need for help.

The essays deal with a variety of problems. One interesting chapter discusses "The Single Woman as a Foster Mother." Three single women who are considered successful foster mothers are analyzed. Although the author is not ready to make a general statement concerning their situation, she states, "that these three women were, in spite of their unmarried state, good foster mothers, there is no doubt. Almost any foster-home agency which will consider the applications of single women can find others just as successful. They should be selected with their assets and liabilities well considered, and with the same general philosophy which we use in choosing any foster parent" (page 95).

Three chapters deal with the psychological and social problems of the adoption process: "Babies in Search of a Home," "Telling Adopted Children,"

and "The Adopting Parent Sees the Child." All three chapters are based on real experiences and relate actual happenings in this process of establishing new parent-child relationships.

It is to be hoped that this series of studies and others which are to follow will serve to inform the general public of the worth of social case work, and that research in this field is directed toward improved services.

AMALIE K. NELSON

DENNIS, WAYNE, *et al. Current Trends in Psychology.* Pittsburgh, Pennsylvania: University of Pittsburgh Press, 1947. vii+225 pp.

Since the second World War considerable discussion has taken place as to where psychology is headed. Many new fields have opened, and changes of emphasis in others have occurred. This book is composed of eight lectures, covering the trends in as many areas of psychology, delivered at the University of Pittsburgh in March, 1947. The lecturers were well selected as representatives of their respective fields.

Although the lectures do not cover all of psychology, they do include areas of great significance. Without exception they contain much food for thought for anyone interested in psychological trends, either as a psychologist or as a person in a related field. They should be of definite interest to educators as a group.

The lecture on "Psychology as a Profession" serves as an excellent introduction. The lectures on experimental, child, personnel, and clinical psychology are outstanding discussions of the past, present, and possible future trends of these well-established areas. The lecture on psychotherapy is a most interesting discussion, including pertinent suggestions for education in the classroom as well as a survey of various points of view in the field.

"Human Engineering" is discussed as a new area of psychology which might be classed as a "war baby." The potential future of this area is presented as most outstanding. The lecture on "The Sample Interview Survey" is unusual in that it discusses clearly a new technique in the realm of psychology which may have marked effects on research in the social sciences as a whole.

In general, this book is well worth the time it takes to read it.

FRANK M. FLETCHER, JR.

* * *

Arithmetic Learning in an Experience Curriculum

[*Continued from page 162*]

cult or distasteful. There is a vicious circle in which teachers who had a baffling, unsatisfying experience with arithmetic in their school days proceed to use curricular materials and procedures similar to those which baffled them, in ways which baffle children. Going through the motions of arithmetical processes

in systematic fashion with only a mechanical sense of what is expected or required, even though traditional, is surely not the royal road to the development of mathematical insight and quantitative thinking, nor to the carry-over of flexible functional number skills. If a teacher can successfully develop mathematical concepts and relationships with individuals committed to her care when the strikes are against her, certainly she can be trusted to try out a program where these handicaps are nonexistent.

[Vol. XXVIII, No. 6]

A School Farm Offers Educational Opportunity

[*Continued from page 163*]

have a much wider usefulness. It should, in fact, be used by all pupils in the school. The opportunities it offers in nature study, geography, general science, and biology are obvious. Since running the farm is a business enterprise, classes in arithmetic, high-school mathematics, and business practices will have the opportunity to work at real rather than make-believe problems. Students will get practical experience in operating a community institution, which is splendid practice in democratic living. Already the pupils are beginning to refer to "our farm."

Moreover, the usefulness of the farm will not be confined to the school; it will serve adult educational needs also. It will serve as a demonstration to private landowners of what can be done with very limited means in rehabilitating worn-out land. It will tend to integrate the work of the school more closely with the life of the community; more than 130 persons were present at a recent "open house" on the farm. Plans call for the development of a picnic area in one of the most scenic portions of the farm; this will no doubt contribute substantially to acceptance of the farm as a community institution.

Mr. Fay, the donor, Mr. Lewis, the teacher, and those who worked with them have provided Jewett school with unusual opportunities. All are entitled to the gratitude not only of the local school patrons but of all friends of public education. It is to be hoped that other schools may come to appreciate the educational values that a school farm offers, and that other landowners may make gifts similar to that of Mr. Fay.

R. H. E.